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Journal of the Society of Arts.**FRIDAY, JULY 5, 1867.****Announcements by the Council.****MEETING OF COUNCIL.**

Monday, July 1st, 1867.

At the first meeting of the present Council since their election, William Hawes, Esq., Vice-President of the Society, was unanimously elected Chairman for the current year.

SOCIETY'S VISIT TO THE PARIS EXHIBITION.

The Council have directed the Secretary to make arrangements for a visit of the members of the Society to the Paris Exhibition. The period fixed for the visit extends from Monday, the 29th of July, to Monday, the 12th of August. A reception-room has been provided for the use of the members during their stay, where their correspondence may be addressed, and where they will have the convenience of writing letters, making appointments with their friends, and where notices of all arrangements for visits to various places will be suspended. Lists of hotels and apartments will also be provided there for consultation.

A programme is in the course of preparation. Members contemplating visiting Paris at this time are requested to send in their names to the Secretary, in order that cards of membership and programmes may be furnished to them.

ARTIZANS' VISITS TO PARIS.

At the last and former International Exhibitions held in this country, arrangements were made by the French Government to facilitate the visits of skilled artizans, and interesting reports on the Exhibitions were made by them to their government. Believing that such visits on the part of skilled workmen to these great international displays not only exercise a beneficial influence upon the men themselves, but also upon the progress of industry in the country to which they belong, the Council have resolved to raise a fund to be employed in aiding a limited number of English workmen, specially selected from their respective trades, to proceed to Paris for the purpose of studying and reporting to the Society upon the relative merits of foreign and English workmanship, as represented in the present French Exhibition.

A considerable sum will be required satisfactorily to accomplish this object, and, in order to raise these funds, the Council have determined to appeal to the members of the Society and others to join in a subscription for the

furtherance of the undertaking; and they have decided to commence the subscription by a vote of one hundred guineas from the funds of the Society.

The Council have addressed a letter to Her Majesty's Commissioners for the Exhibition asking their assistance in obtaining pecuniary aid from the Government to enable them to realize their plan on a sufficiently extensive scale. Her Majesty's Commissioners thereupon passed the following resolution, which was proposed by Earl Granville, and seconded by Mr. Forster, M.P.:— "That the intention of obtaining reports by foremen and skilled workmen on their respective trades, on the occasion of their visiting the Paris Exhibition, is, in the opinion of Her Majesty's Commissioners, worthy of encouragement on the part of Her Majesty's Government."

This resolution having been transmitted by Her Majesty's Commissioners to the Lords of the Committee of Council on Education, their lordships have decided to "place at the disposal of the Society of Arts a sum not exceeding five hundred pounds, provided that the Society raises at least the same amount by voluntary subscriptions."

In order, therefore, that this grant may become available for the object in view, the Council venture to urge upon the members of the Society and others the importance of adding their names to the subscription list as early as possible.

The following is the list of subscriptions up to the present date:—

H.R.H. the Prince of Wales, President ..	£31	10	0
Society of Arts ..	105	0	0
Earl Granville, K.G. ..	5	0	0
Lord de L'Isle ..	10	0	0
Thomas Twining ..	2	2	0
Sir J. P. Boileau, Bart. ..	5	0	0
George Godwin, F.R.S. ..	1	1	0
Vice-Chancellor Sir W. Page Wood, F.R.S. ..	10	0	0
W. H. Bodkin (Assistant-Judge) ..	3	3	0
Sir Rowland Hill, K.C.B. ..	3	3	0
Benjamin Shaw ..	2	2	0
Alfred Davis ..	10	10	0
Eugène Rimmel ..	5	5	0
Frederick Mocatta ..	2	2	0
James Marshall ..	2	2	0
Robert Dawbarn ..	1	0	0
Henry Vaughan ..	10	10	0
Philip Sancton ..	5	0	0
Somerset A. Beaumont ..	5	0	0
G. Dixon, Mayor of Birmingham ..	5	5	0
Messrs. Smith and Wright, Birmingham ..	5	5	0
Messrs. Griffiths and Brown, Birmingham ..	5	5	0
Henry Weiss, Birmingham ..	2	2	0
W. H. M. Blews, Birmingham ..	2	2	0
W. Middlemore, J.P., Birmingham ..	5	5	0
Thomas Lloyd, Birmingham ..	2	2	0
Messrs. Elkington and Mason, Birmingham ..	5	5	0
Messrs. John Hardman and Co., Birmingham ..	2	2	0
Messrs. F. and C. Osler, Birmingham ..	5	5	0
The Proprietors of the <i>Birmingham Journal</i> and <i>Daily Post</i> ..	2	2	0
The Proprietors of the <i>Birmingham Gazette</i> ..	2	2	0
R. L. Chance, Birmingham ..	2	2	0
T. Avery, Birmingham ..	2	2	0
W. Tonks and Sons, Birmingham ..	2	2	0

W. Lucas Sargent, Birmingham .. .	2	2	0
— Mountain (Messrs. Walter, May, and Co.), Birmingham .. .	2	2	0
J. A. Williams, Birmingham .. .	2	2	0
Henry Charlton, Birmingham .. .	2	2	0
W. Bartlett and Sons, Birmingham .. .	5	0	0
John P. Turner, Birmingham .. .	0	10	6
W. H. Avery, Birmingham .. .	2	2	0
Messrs. Peyton and Peyton, Birmingham .. .	3	3	0
James Cartland, Birmingham .. .	2	2	0
Messrs. Smith and Chamberlain, Birmingham .. .	2	2	0
Messrs. Baker and Son, Birmingham .. .	2	2	0
Messrs. Hinks and Wells, Birmingham .. .	2	2	0
Decimus Burton, F.R.S. .. .	1	0	0
W. Botly .. .	1	1	0
Professor Robert Bentley .. .	2	2	0
John Stuart Mill, M.P. .. .	1	1	0
G. F. Wilson, F.R.S. .. .	2	2	0
Henry Creed .. .	1	1	0
The Marquis of Salisbury, K.G. .. .	10	0	0
D. Robertson Blaine .. .	2	2	0
William Hawes .. .	2	2	0
Seymour Teulon .. .	1	1	0
G. N. Hooper .. .	2	2	0
Lord Taunton .. .	5	0	0
Henry Cole, C.B. .. .	1	0	0

Subscriptions may be forwarded to the Financial Officer, at the Society's House.

The Council are now prepared to receive the names of any workmen recommended by their respective trades as fit and proper persons to undertake this important duty on behalf of their fellow workmen.

SUBSCRIPTIONS.

The Midsummer subscriptions are due, and should be forwarded by cheque or Post-office order, crossed "Coutts and Co.", and made payable to Mr. Samuel Thomas Davenport, Financial Officer.

Proceedings of the Society.

FOOD COMMITTEE.

A meeting of the Sub-Committee on Fish was held on Tuesday, 14th May:—Present, Mr. Benjamin Shaw in the chair; Mr. Caird, Mr. Ware, Mr. Michael, Professor J. Wilson, Captain Grant, and Mr. Ludford White.

Mr. CHARLES, of Pimlico, attended, and gave information with respect to the fish trade in London.

The CHAIRMAN, in the first place, called the attention of Mr. Charles to the alleged destruction of the fish by the salesmen in Billingsgate Market in the event of an over supply, in order to keep up the price of the article.

Mr. CHARLES—Had been a fishmonger many years and in a large way of business, and was well acquainted with the practice of the Billingsgate Market. He had a very large experience in the trade, and could state positively that no such thing ever occurred. He could not imagine such a thing as a salesman sacrificing a penny to benefit his neighbour a shilling. There was no union, he said, amongst the salesmen of Billingsgate for the purpose of keeping up prices, which were regulated by the supplies of each day's market. They all worked independently of each other. He gave his decided opinion that no wholesale destruction of fish, such as was alleged, ever occurred on the part either of the salesmen or the smack owners. Mr. Charles gave a brief history of the formation

of the Limited Liability Company known as Hewett and Co., established for the purpose of bringing fish to the market in steam vessels in larger quantities, and with greater despatch than could generally be accomplished by the ordinary fishing vessels.

In reply to questions with respect to the establishment of another fish market in the west of London,

Mr. CHARLES expressed a decided opinion against such a proposition. He stated that the previous fish market which formerly existed near that spot (Hungerford) was to a great extent a failure. The establishment of another market in the west of London would, he said, have the effect of dividing the buyers, and would involve the necessity on the part of persons like himself, of having buyers at each market, and the result might be that a larger stock of a particular kind of fish might be procured than the retailer required for his trade, and that would result in loss to him.

Captain GRANT explained that his own idea was the establishment of a fish market at the West-end, to which the large quantities of fish from the western coasts could be sent from the Great Western terminus, instead of the whole being conveyed as at present to Billingsgate and brought thence for distribution by the West-end dealers. It appeared to him that considerable advantage would accrue both to the trade and to the public from the establishment of a fish market in some central locality of the West-end of London.

Mr. CHARLES said he would give the Committee his reasons for believing that such a plan would not answer. The fishing business, he remarked, was a proverbially uncertain one. It might happen that for days and weeks together the supply of all kinds of fish was very small indeed, and it would not do to spread that over two markets. No dealer would think of going to a West-end market to buy his stock of fish. Under the existing system of the great fish market at Billingsgate there were certainly advantages both to the dealers and the public, as in the event of large quantities of fish being brought into the market it was disposed of at lower prices. The article was one of a very perishable nature, and if spoilt was a total loss to the owners. Mr. Charles did not think that the establishment of another market would lead to larger supplies being sent. He thought it would have no influence whatever upon the supplies. For instance, on that day a very large lot of mackerel was received from Kingstown, near Dublin, which were brought by steamer to Milford Haven, and thence by the Great Western Railway to Paddington; and it was no more trouble to send the vans when loaded to Billingsgate than it would be to take them to a West-end market, inasmuch as a journey from the station was involved, and it was only a matter of about three-quarters of an hour to convey the whole lot of fish to Billingsgate. He was convinced, after considerable experience, that the multiplication of fish markets in London would be found to be a disadvantage rather than an advantage, and in his opinion it was quite impracticable to work such a system. Mr. Charles would further observe that two metropolitan fish markets would be disadvantageous to each other. The sensitiveness of buyers and sellers would delay business till the state of supply in each market could be compared; in the meantime the article would deteriorate in quality and value. The price, he said, varied 50 per cent. from day to day. Soles, which one day were sold at 6d. per lb., on another day would fetch 1s. per lb. This was especially the case with regard to salmon. On the previous day he bought his salmon at 2s. per lb., that day it cost him 2s. 6d. per lb. There was a smaller supply. The variation was sometimes as great the same day. It was practically sold by auction. The salmon was consigned to salesmen, who knew their customers, and who were able to buy it and who were not. Of course it was an open market, inasmuch as those who went with their cheque-book or cash had equal opportunities of buying, but it was a bad thing for those who wanted credit.

The CHAIRMAN then called the attention of Mr. Charles to the following passage from the Report of the Fisheries Commissioners:—

"The great importance of fish as an article of food may be clearly shown by a comparison of the total supply of fish and beef to London in the course of a single year. Neither in the case of fish, nor of beef, is it possible to give accurate statistics. But it has been roughly estimated that London consumes 300,000 fat cattle annually, which, at an average weight of 6 cwt. each, would amount to 90,000 tons of beef. At this moment there are between 800 and 900 trawl vessels engaged in supplying the London market with fish, and assuming the average annual take for each to be 90 tons, this would give a total of some 80,000 tons of trawled fish. This is irrespective of the vast quantities of herrings, sprats, shell-fish, and of other descriptions of fish which are supplied by other modes of fishing. The weight of beef and of fish annually consumed in London is thus in no great disproportion. But the price is very different. The fisherman receives, on an average, little over £7 a ton for his fish, prime and offal together,—the farmer is readily paid for his beef not less than £60 a ton. But this disparity of price becomes the more remarkable when tested by the practical experience, not of the producer but of the consumer. The buyer of fish in the West-end of London finds that, on the average, his fish costs him more per pound weight than his beef or mutton. And when inquiry is made, the salesmen at Billingsgate readily admit that the retail dealer gets an enormous profit on the small quantity of fish he disposes of. It might be thought that the competition of trade would rectify any demand for excessive profit, but in this case it does not seem to have that effect. While the fishermen receive 3d. to 4d. a pound at Billingsgate for prime fish, the buyer is charged 1s., 1s. 3d., and 1s. 6d. a pound by the retailer."

Mr. CHARLES said he had read that report, and since receiving the invitation to attend before the committee, he had taken care to weigh several varieties of fish for their information. He would explain, first, with regard to trawl fish, that was brought to market now, whereas formerly it was not considered worth bringing. This remark especially applied to haddocks, from the great demand which existed for that article in a cured state. Formerly the great supply of that article was sent from Scotland, but the demand was so great that very large quantities were cured in London. Haddocks caught by the trawl used to be regarded as offal, and were the perquisites of the fishermen, who dried what they required in the rigging. The haddocks used for table were only those caught by the hook, though the fish were not so good as those which were trawled. The cause of the great difference of price wholesale to the fishowners and that charged by the salesmen to their customers was from a large proportion of the fish being of an inferior quality, which was sold at a low price by the retailer, whilst the large proportion of fish required by such dealers as himself was of high quality. The low-priced fish reduced the average.

[Mr. Charles read from, and handed in to the committee, invoices of fish, showing the great variation in the price of salmon from day to day, as also of turbots, soles, &c. The difference in the price of salmon wholesale was shown to be as much as 8d. per lb., from one day to another.]

Mr. CAIRD remarked that the greatest fluctuations appeared to exist in salmon, which was not a sea-fish.

Mr. CHARLES said, even in sea-fish the fluctuations in price were very considerable. On that morning he was able to buy whiting at half the price he paid for them on the previous day. He bought them of a master fisherman, who sold his own goods, at 7d. per lb., which was equal to £65 8s. 8d. per ton, while salmon, at 2s. 1d. per lb. was equal to £233 6s. 8d. per ton; turbot at 6d. per lb. was equal to £56 per ton.

Mr. CAIRD remarked that it was very much the subject of complaint that the difference between the price charged to the customer and that paid to the salesman by the West-end dealers was very much greater than fair profits of trade required or justified.

Mr. CHARLES said the fact was not so. It was to be borne in mind that the fish was weighed to the dealer as it came into the market, including the offal, which, in some kinds of fish, amounted to a large proportion. The fish sold by retailers to their customers was sold free from all offal whatever, and in a clean state. In the preparation of whiting for table they lost nearly half their original weight. A fish which weighed one pound, when it was skinned and cleaned ready for table would not weigh much more, perhaps, than half a pound. It was, therefore, scarcely a fair way of putting it. As far as his own experience went, looking at the many expenses which the trade entailed, the profits of the retailers were by no means excessive, nor were they equal to those of many other trades in which the article dealt in was not of a perishable nature. He estimated that the profits upon all that passed through the hands of a dealer like himself would not be more than 10 per cent., which, looking to the expenses, could not be regarded as excessive. Personally speaking, he was satisfied with that amount of profit in his business.

The CHAIRMAN remarked that as compared with meat there was this difference, that nearly all the offal of an animal was turned into money by the retailer, which could not be the case with fish. Reverting to the question of a West-end fish market, he observed that at the present day Billingsgate could not be regarded as a central market for the metropolis.

Mr. CHARLES remarked he thought it was the best centre for the trade that could be found. Even London itself, he said, was not so central as it used to be for a fish market. Large quantities of fish were now sent direct from Hull to Ireland which used formerly to be sent to London.

Captain GRANT inquired whether the space for fishing vessels was not very restricted at Billingsgate?

Mr. CHARLES replied that there was generally plenty of room for the vessels. Such large quantities of fish were now sent by railway that there were not one-fourth of the vessels at Billingsgate which there used to be.

Mr. WARE called the attention of Mr. Charles to the following passage in the report of the Fisheries Commissioners:—

"The wholesale price realized for the two descriptions of fish by the fishermen is shown in the returns for five years, given by Mr. Knott. His average price per ton was about £7; but the price of the "prime" averaged £23, while that of the offal was only £2. It may indeed be said, broadly, that the main supply of the cheaper description of fish, which forms so valuable an article of food to the large masses of our population, is yielded by modes of fishing other than line-fishing, and that any attempt to restrict the industry of fishermen to that mode of capture would be certainly followed by an immediate diminution in quantity and increase in price of the coarser kinds of fish, and by a nearly total cessation of the supply of soles."

Mr. CHARLES observed that of the fish taken by the trawl, not a sixteenth could be estimated as prime fish. Large turbots were not now put upon the table; smaller sized fish were preferred, and while a turbot weighing 20lbs. or 24lbs. might be bought for 12s., as much as 8s. would be given for a fish of less than half that weight. With regard to the price of 2½d. per pound, or £23 per ton, for "prime," he could inform the committee that he had this year paid as much as 30s. each for cod fish; he was obliged to pay that price or go without; but he must have fish for his customers, whatever the price might be; and he might state that for every prime fish that came into the market there were ten buyers. The supply at present was generally nearly equal to the

demand, but there always had been ten buyers for every fish.

Professor WILSON suggested that that fact implied that the supply was not equal to the demand.

Mr. CHARLES said sometimes things were cheap; but there must be times when things were scarce, and then the prices went up. If the supply were doubled and trebled the consumption would take it up no doubt. He thought no limit could be placed upon it. If they could bring fish to £7 per ton there would be no limit to the demand for it.

Mr. LUDFORD WHITE remarked that it had been stated to the committee that fish was sometimes kept back at the port in order to keep up the prices.

Mr. CHARLES believed, if it was done at all, it was only to a limited extent. It might be the case that a very good cargo of fish might be divided over two markets—a portion being sent to-day and the remainder to-morrow; but that was not done to any great extent.

Mr. CAIRD asked whether Mr. Charles considered the supply at Billingsgate was increased or otherwise.

Mr. CHARLES replied it had diminished in his time; because London was not so central as it used to be, and the fish which used to be sent from Hull and Grimsby did not now come to London.

Mr. CAIRD further asked whether Mr. Charles was aware of any large increase in the investment of capital in the fishing trade in consequence of the increased demand of the London market?

Mr. CHARLES said no doubt there had been a large increase of capital employed in the trade, and the vessels engaged in it were worth a very considerable sum.

Proceedings of Institutions.

EAST LANCASHIRE UNION OF INSTITUTIONS.—The annual summer examination of this Union was held on Saturday, June 15, and attended by 129 candidates, of whom seventeen were females. The candidates met at nine o'clock, a.m., in the Assembly-room of the Mechanics' Institution, Burnley, and, with two hours' interval in the middle of the day, the examination lasted till five p.m. Arrangements were made by which those candidates who came from a distance were enabled to travel to and from Burnley for one fare. The pupils of the following Institutions competed:—Burnley Mechanics' Institution, Burnley Church Literary Institution, Bacup, Haslingden, Crawshawbooth, Rawtenstall, Newchurch, and Lomeshaye. There are now two distinct annual examinations of the Union—a previous examination having been held at the end of March, for the last two years, for the convenience of those evening classes where the pupils disperse early in the spring. This examination is held at local centres, while the summer examination is held collectively at Burnley. The spring examination was attended by 100 candidates, of whom eighteen were females. The examinations have therefore been attended this year by 229 candidates, 194 males and 35 females, a larger number than in any previous year. After the examination on June 15th, Sir James Kay-Shuttleworth, Bart., the President of the Union, delivered an eloquent address to the candidates on the state of education in France and Prussia in comparison with that of England, and pointed out the urgent necessity for more attention to the secondary and technical education of the industrial population, if England is to keep pace with the Continental nations in inventive skill and manufacturing industry.

PARIS UNIVERSAL EXHIBITION.

The following are the particulars of prizes awarded to British exhibitors:—

In the fine arts department three prizes—Mr. Calderon,

A.R.A., taking a first, and Mr. E. Nicol and Mr. F. Walker each a second prize. In Class 3 Messrs. A. B. Wyon and J. S. Wyon obtained third class prizes; and in Class 4 a first prize was awarded to the late Captain Fowke, a second to Mr. W. D. Lyne, and a third to Mr. E. Barry.

In Class 5 (Engraving and Lithography) no prize was awarded to Great Britain.

Of the grand prizes six were awarded to British exhibitors. The following are the names of the holders of these prizes—Group I. (Class 4, Architectural Designs and Models), Mr. Waterhouse; in Group VI. (Class 54, Machine Tools), Mr. Whitworth; Class 64 (Telegraphic Apparatus), the Atlantic Telegraph Company, and Siemens Brothers, London; and in Class 66 (Navigation), the Lifeboat Society, Napier and Sons, Glasgow, and Penn and Co., Greenwich.

The following is a list of the awards to other British exhibitors:—

GROUP II.—APPARATUS AND APPLICATION OF THE LIBERAL ARTS.

CLASS 6.—*Printing and Books.*—Gold Medal—V. Brooks. Silver Medal—Bradbury and Evans, Cassell, Petter, and Galpin, Chambers, Hanhart, Illustrated London News, W. Mackenzie, Rowney, Spottiswoode and Co., Blake, Stephenson, Virtue and Co. Bronze Medal—Wilkinson Bradbury, Butler and Tanner, Day and Sons, Dickes, Macdonald Maclure, Nelson and Sons, Wallis. Honourable Mention—Belous (Gloucester).

CLASS 7.—*Paper, Stationery, Binding, Painting, and Drawing Materials.*—Gold Medal—Cowan and Co., Saunders. Silver Medal—Brockedon, Crompton, Gillot and Co., Goodall, Hyde (ink), Hyde (wax), Letts and Son, Mordan, Portal (Laverstoke Mills), Riviere, Rowney, Stephens, Marcus Ward, Waterston. Bronze Medal—Alexandra Printing Ink Company, Bain, Beauley, Bellbridge, Bell and Daldy, Blackie, Brokedon, Brown, Causton, Cohen, Day and Son, Eyre and Spottiswoode, Wells Hinks, Hughes and Kimber, Zehnsdorf, Lamb, Lyon, Morley, Newman, Ramage, Reeves, Reynolds, Sampson Low, Smith and Elder, Team's Wood Pulp Company, Willey, Wills, Wolff.

CLASS 8.—*Applications of Drawing and Modelling to the Common Arts.*—Silver Medal—Lord Romilly, Society of Arts, J. S. and A. B. Wyon. Bronze Medal—Aldridge (Kensington Museum), Marcus Ward, Thomas Martin, Newman, Ortner and Houle, Rooke, Ball Searam, Sparkes. Honourable Mention—Jenner and Newstub, Master of the Rolls, A. Slatter (South Kensington Museum).

CLASS 9.—*Photograph Proofs and Apparatus.*—Silver Medal—Bedford, Dallmeyer, England, Mudd, Robinson, Swann, C. T. Thompson, Woodbury. Bronze Medal—Blanchard, Briggs, Caldese, N. K. Cherrill, Griggs, Joubert, Macfarlane, Mayall, Meagher, Ross, Tod, Vernon Heath, Wortley. Honourable Mention—Beasley, Beau, Browning, Cameron, Coghill, Cramb, Cridal, Cruttenden, Hemphill, Hosmer, Pantoscopic Society, Pouncey, Ross, Rouch, Royal Artillery, Solomon, Swann, Thomas, Thompson, Verschoyle, Wilson, Wordley.

CLASS 10.—*Musical Instruments.*—Gold Medal—Broadwood. Silver Medal—Bevington, Distin, Kirkman. Bronze Medal—Alison, Brinsmead, Bryceon, Ramsden, Wormn. Honourable Mention—Kelly, Lachenal.

CLASS 11.—*Medical and Surgical Instruments and Apparatus.*—Gold Medal—Ash and Sons. Silver Medal—Evans and Stevens, Masters, Savory and Moore. Bronze Medal—Lemale, Longdon, Rein, Roth. Honourable Mention—Bacon, Earl of Caithness, Condy, Dickson, Marsden, Normans and Sons, Redford, T. P. Salt, Spence, Twinberrow, Wright.

CLASS 12.—*Mathematical Instruments and Apparatus for Teaching Science.*—Gold Medal—Beck, Chance, Dallmeyer, Ross. Silver Medal—Elliott, Ladd. Bronze Medal—Cole, Maru, Pauchett, Statham. Honourable Mention—Bethune, Crisp, Cronmire, Dunlop, Smith.

CLASS 13.—*Maps and Geographical and Cosmographical*

Apparatus.—Silver Medal—Selwyn, Stamford. Honourable Mention—Bousquet, T. Nelson and Sons.

GROUP III.—FURNITURE AND OTHER OBJECTS FOR THE USE OF DWELLINGS.

CLASSES 14 AND 15.—*Furniture and Upholstery and Decorative Work.*—Gold Medal—Owen Jones, Wright and Mansfield. Silver Medal—Dyer and Watts, Gillow, Holland, Trollope. Bronze Medal—Bettridge, Clayton and Bell, Cole, Colman, Heal, Hunter, Ingledew, Jackson (Rathbone-place), Lamb, Macdonald, Peyton, Rowley, Taylor, Wedgewood, Wertheimer, Wyatt. Honourable Mention—Alderman, Benham, Lady Carrington, Cox, Filmer, Hayward, Skidmore, Ward.

CLASS 16.—*Flint and other Glass; Stained Glass.*—Silver Medal—Dobson, Hardman, Powell. Bronze Medal—Aire and Calder, Edmundson, J. Green, Heaton, Pellatt, Ward and Hughes. Honourable Mention—Cottier, Cox and Son, Dury, Gardner, H. Green, Lavers and Barraud, Millar, Newman, Phillips, Bond-street.

CLASS 17.—*Porcelain, Earthenware, and other Fancy Pottery.*—Gold Medal—Copeland, Minton. Silver Medal—Brownfield, Doulton, Wedgwood. Bronze Medal—Gray, Jones, Pinder, Price, Primavesi. Honourable Mention—Adams, Allen, Bishop's Waltham Clay Company.

CLASS 18.—*Carpets, Tapestry, and Furniture Stuffs.*—Gold Medal—Brinton and Lewis, Templeton. Silver Medal—Ackroyd, Henderson, Lapworth, Leather Cloth Company, Morton, Nairn, Patent Woollen Cloth, Wilkinson, Willis. Bronze Medal—Britannia Rubber Company, Deed, Firth, Humphries, Kohnstamm, Southwell, Harry Tayler, Templeton, Treloar, Woodward and Grosvenor, Woodward, Palmer. Honourable Mention—Cow, Hill, Hoff, Trestrail, Tull, Whincup, Whiteley, Wildey.

CLASS 19.—*Paperhangings.*—Gold Medal—Potter. Silver Medal—Scott, Cuthbertson. Bronze Medal—W. Cooke, Jeffrey, Marsden, H. Woollams, J. Woollams. Honourable Mention—Horne.

CLASS 20.—*Cutlery.*—Gold Medal—Brookes and Crookes. Silver Medal—Morton. Bronze Medal—Mappin, Webb, M'Daniel.

CLASS 21.—*Gold and Silver Plate.*—Gold Medal—Elkington, Hancock, Hunt and Roskell. Silver Medal—H. Emanuel. Bronze Medal—Mappin, Webb, Watherston, Shaw and Fisher. Honourable Mention—Donne, Hardman.

CLASS 22.—*Bronze and other Artistic Castings and Repoussé Work.*—Nil.

CLASS 23.—*Clock and Watch Work.*—Gold Medal—Kulberg, Parkinson and Frodsham, Poole. Silver Medal—Adams, Blackie, G. Blackie, Dent, Mercer, Nicole and Capt. Bronze Medal—Benson, Claxton, Holdsworth, Johannsen, Sewell, O. Vivier, Walker, White. Honourable Mention—Howell and James, Webster.

CLASS 24.—*Apparatus and Processes for Heating and Lighting.*—Gold Medal—Winfield. Silver Medal—Benham, Bowser. Bronze Medal—Adams, Brown and Green, Leoni, Philp, Solomon, Musgrave, Woodcock. Honourable Mention—Barton, Best and Hobson, Defries, Forrest, Freeman, Glover (Pimlico), Huxhams and Brown, Leamington Range Company, M'Sherry, Ratcliff, Steel and Garland, Strode, Sullivan, Young Brothers.

CLASS 25.—*Perfumery.*—Silver Medal—Atkinson. Bronze Medal—Cleaver, Pears, Perks, Pisse, Rimmell. Honourable Mention—Napoleon Price, Ransom, Remington.

CLASS 26.—*Morocco Work, Fancy Articles, and Basket Work.*—Silver Medal—Leuchars, Schaffer. Bronze Medal—Betjemann, Goggin, Jenner, Marcus Ward. Honourable Mention—Fenton, Howell and James.

GROUP IV.—CLOTHING, INCLUDING FABRICS, AND OTHER OBJECTS WORN ON THE PERSON.

CLASS 27.—*Cotton Yarns, Threads, and Tissues.*—Gold Medal—Armitage, Bazley, England and Scotland (col-

lection), Horrockses, Radcliff. Silver Medal—Barlow and Jones, Crewson, Hawkins, Kesselmeyer, Langworthy, Tolson. Bronze Medal—Christy, Faulkner, Glover (Manchester), Hall and Udall, Jabez Johnson. Honourable Mention—Martin and Johnson.

CLASS 28.—*Flaxen and Hempen Yarns, Threads, and Tissues.*—Gold Medal—“Belfast,” Brown, Charley, Fenton. Silver Medal—Matier. Bronze Medal—Glasgow Jute Company. Honourable Mention—Ainsworth, Pegler.

CLASS 29.—*Combed Wool and Worsted Yarns and Fabrics.*—Gold Medal—Ackroyd, “Bradford.” Silver Medal—Middleton, Mitchell and Shepherd, Willett. Bronze Medal—Smithson, Taylor.

CLASS 30.—*Curled Wool and Woollen Yarns and Fabrics.*—Gold Medal—“South of Scotland,” “West of England.” Silver Medal—Batley Chamber of Commerce, Bliss, J. and H. Brown, Clay, Davies and Sons, Geissler, Houston, Jowling, Laverton, Lawton, Marling and Co., Leonard Marling, Naish, Salter, Strachan, Taylor Brothers. Bronze Medal—Barnicott, Binns and Godfrey, Birchall, Byers, Carr, Colson and Co., Howgate Day, Watkinson Day, Nicholls Dixon, Firth, Hall and Frater, Haigh, Hargreave, Harrison, Hunt and Winterbotham, Laing and Irvine, Mahoney, Mellor, Riley, Sanderson, Scott and Sons (Morley), Smith and Sons (Morley), Stockdale, Taylor and Lodge, Thackral, Thomson and Dodd, Vickerman, J. Walker and Sons, Wilson (Kendal). Honourable Mention—Cambrian Flannel, Crowther and Sons, Glendinning, Hogg M'Intyre, Kershaw (Rochdale), Leathly, Scholefield, R. Scott, W. Scott, J. Scott and Sons, Stockwell, Wade, Walton and Rhodes.

CLASS 31.—*Silk and Silk Manufactures.*—Gold Medal—Collective British. Silver Medal—Birchenough, Nicholson Brough, Carter and Phillips, Cortauld, Franklin, Fry and Co., Grout, Seamer, Slater, (Buckingham), Spires, Taylor and Stokes. Bronze Medal—Carr and Co., Chadwick, Coventry Elastic, D. Evans, Hart, Hodges (Leicester), Lister, Norwich Crape, Posselt, Wanklyn. Honourable Mention—Grant and Gask, Hall and Udall, George Holme, Kay and Richardson, Kesselmeyer, Greenhalgh, Peel, Turner, Barrs and Co.

CLASS 32.—*Shawls.*—Silver Medal—Scott Kerr. Bronze Medal—Bliss, Brigg. Honourable Mention—Hitchcock Williams, Johnstone, Manby, Romanes and Paterson, Smith.

CLASS 33.—*Lace, Net, Embroidery, and Trimmings.*—Gold Medal—“Nottingham.” Silver Medal—Copestake, Hartshorn, Hayman and Alexander, Jacoby. Bronze Medal—Alton (Dublin), Barnet and Maltby, Dunncliffe, Mary Jones, Lester, Manlove Packer, Tredwin. Honourable Mention—Mrs. Alderson, Davies and Co. (St. Martin's-lane), Miss Maclean.

CLASS 34.—*Hosiery, Under-Clothing, and Minor Articles.*—Gold Medal—Hogg M'Intyre. Silver Medal—Plant (Leicester), Smyth (Dublin). Bronze Medal—Coles, Martin, Pentony, Swears and Wells, Sweetman. Honourable Mention—De Becker, Jowett, Lane.

CLASS 35.—*Clothing for both Sexes.*—Silver Medal—Christy, Lobb, Player, Vyse. Bronze Medal—Atloff and Norman, Carles, Craig, East, Glew, Hall, Melton, Brown Munt, Tait, Tress, Welch, Wilhelm. Honourable Mention—Ashton, Bowley, Grant, Hall (Hats), Hall (Sparkes), Mole, Norman, Wilson (Newcastle).

CLASS 36.—*Jewellery and Ornaments.*—Gold Medal—Phillips. Silver Medal—Brogden, Emanuel, Hancock, Hunt and Roskell, Randel (Birmingham). Bronze Medal—Crouch, Howell and James, Jacob, Lund, Marshall, Watherston. Honourable Mention—Neal, Thomas, Turnbull, Wheatley, Wiley.

CLASS 37.—*Portable Arms.*—Silver Medal—Greener, Lang, Reilly, Small Arms Company, Whitworth. Bronze Medal—Gibbs, A. L. Gibbs. Honourable Mention—Dougal, Ludlow, Prentice.

CLASS 38.—*Travelling and Camp Equipages.*—Silver

Medal—Cave, Wilkes. Bronze Medal—Silver. Honourable Mention—Bussey Smith.

CLASS 39.—*Toys*.—Silver Medal—Cremer.

GROUP V.—PRODUCTS, RAW AND MANUFACTURED, OF MINING INDUSTRY, FORESTRY, &c.

CLASS 40.—*Mining and Metallurgy*.—Gold Medal—Barrow (Alverston), Bowring Iron Co., Brown (Sheffield), Burys (Sheffield), Johnson, Matthey and Co., Lilleshall, Low Moor, Monkbridge Co., Turton. Silver Medal—Bartleet, Beard and Sons, Boulton, Comfort, Dowlaies, Eagle Iron Co., Evans and Askin, Everett, French Jewellery Co., Gilpin, Hart and Sons, Johnson and Nephew, Kirby, Beard, Lloyd and Lloyd, Loveridge, Patent Bolt and Nut, Plumbago, James Russell, John Russell, Sharp, Brown, Taylor Brothers, Tonks, West Cumberland, Whitley. Bronze Medal—Aberdare, Addis, Baugh, Betts, Birmingham Iron and Brass Tube Company, Blaenavon, Bodringalt, Broughton Company, Bwllfa, T. Clark and Co., Elliott's Company, Davis (Cardiff), English and Australian Copper Company, Green's Tube Company, Greening, Haswell Coal Company, Heeley, Hill (Birmingham), Dr. Honeyman, Field, Macdonald, Martineau and Smith, Moreton (Wolverhampton), Millward (Redditch), Morewood and Rogers, Page, Reckitt, T. Smith and Co., Stickley, Walker and Parker, Webster and Horsfall, Wigan Company, Zobel, Townsend and Co. Honourable Mention—Abbott, Bankart, Barnes, Benham, Braby, Brotherton, Dollar Brothers, Green, Gregory, Hayes and Bennett, Heath, J. V. Hill, James Foundry, Leach, Martin, Millward (Birmingham), North of England Forged Nail and Rivet Company, Perrens and Harrison, Pratt, Smith (Leicester), Sparkes, Stanley, Taliska Mining Company, Tudor, Earl Vane, Vickerman, Walton, Whiteway, Ystafera.

CLASS 41.—*Forest Products and Industries*.—Bronze Medal—South Kensington.

CLASS 42.—*Products of the Chase and Fisheries; Uncultivated Products*.—Silver Medal—Bevington, Deed and Ward. Honourable Mention—Da Costa.

CLASS 43.—*Agricultural Products (not used as Food) easily Preserved*.—Silver Medal—St. Ann's Model Farm, Neighbour. Bronze Medal—Bickersteth, Collier, Davis, Evans and Stafford, Kirtseklan, Morton, Raynbird, Thompson, Windle, Woollerton.

CLASS 44.—*Chemical and Pharmaceutical Products*.—Gold Medal—Allhusen, Gossage, Howard, Jarrow Company Muspratt, Price's Company, Young's Paraffin. Silver Medal—Bailey, Bewicke, British Seaweed, Calvert, H. B. Condy, Cow, Hill, Denton and Jutsum, Demuth, Field, Gaskell, D. and W. Gibbs, Hopkin and Williams, Hurlet Alum Company, Johnson and Matthey, Knight, Macfarlane, Mander Brothers, Mawson, Ogleby, Parkes, Rose, Smith, Tudor, Walker Alkali Company, Warne, Wilkinson. Bronze Medal—Adams, Baker and May (Class 30), Britannia Rubber, Burgoyne, Bush, Calley, Clarke, W. Cook and Co., Danley, Davy, Yates and Routledge, Day and Martin, Dodge, Garrod, Goodwin, Green, Haas and Co., Hodgson and Simpson, Holland, Hosegood, Huskisson, C. Jarrow, Langton and Bicknells, Lamb and Sterry, Lange and Moselle, Lowe (Manchester), McDougall, M'Kay, Mason, Nimmo, J. N. Parker and Co., Pulford, W. Ransome, Rogers, Rumsey, Squire, Stephens, Talbot and Alder, W. Taylor and &c., Turner and Son, Wandle, Waring.

CLASS 45.—*Specimens of the Chemical Processes used in Bleaching, Dyeing, Printing, and Dressing*.—Silver Medal—Hands, Ripley. Bronze Medal—Barlow, Dickens, Howe. Honourable Mention—Whincup.

CLASS 46.—*LEATHER AND SKINS*.—Silver Medal—Dixon, Evans, Flitch, Puckridge, Wilson, Walker, Winter and Masters. Bronze Medal—Deed, Pullman. Honourable Mention—Bayley, Bearly, Webb.

GROUP VI.—APPARATUS AND PROCESSES USED IN THE COMMON ARTS.

CLASS 47.—*Apparatus and Processes of Mining and*

Metallurgy.—Silver Medal—Carrett, Marshall, Jones and Levick. Bronze Medal—Bickford, Smith, Towler. Honourable Mention—Beaumont and Locock.

CLASS 48.—*Implements and Processes used in the Cultivation of Fields and Forests*.—Gold Medal—Clayton, Fowler, Garrett, Hornsby, Howard, Ransomes. Silver Medal—Aveling, Benthall, Coleman, Marshall, Penny, Pixley, Reading Company, Richmond, Robey, Samuelson, Smith (Peasehall), Turner. Bronze Medal—Ashby, Bamlett, Kearsley, Nicholson, Ruston, Smith (Kettering), Wallis, Woods. Honourable Mention—Amies, Ball, Brown and May, Fox, Walker, Parkes, Palmer, Underhill.

CLASS 49.—*Implements used in the Chase, Fisheries, and Gathering Wild Products*.—Silver Medal—Aldred, Beard, Kirby, Irish Fisheries. Bronze Medal—Bartleet, Millward. Honourable Mention—Buchanan, Ryder.

CLASS 50.—*Apparatus and Processes used in Agricultural Works, and for the Preparation of Food*.—Silver Medal—Atmospheric Churn, Bradford, Clayton, Spencer. Bronze Medal—Collier, Fleet, Kent, Loftus Perkins, Lyon, Pontifex, Robinson, Silicated Filter, Tye, Whitehead. Honourable Mention—Barnett, Bawden, Canadian Company, Carson and Toone, Clark and Dunham, Farrow and Jackson, Hickling, Keith, Summerscales, Wenham Lake, Williamson.

CLASS 51.—*Apparatus used in Chemistry, Pharmacy, and Tanning*.—Gold Medal—Johnson, Matthey and Co. Silver Medal—Cocks, Plumbago Company. Bronze Medal—Doulton, Hynam, Porter. Honourable Mention—Baker, Bower, Carr, Cliff, Huxhams and Brown, Kent, Wilson.

CLASS 52.—*Prime Movers, Boilers, and Engines, specially adapted to the Requirements of the Exhibition*.—Silver Medal—B. Donkin, Fox, Walker, Galloway, Hicks, Hargreaves, Porter. Bronze Medal—Appleby, Sharp, Stewart.

CLASS 53.—*Machines and Apparatus in General*.—Gold Medal—Merryweather. Silver Medal—Carrett, Marshall, Donkin, Eades, Glover and Co., S. Glover, Gwynne, C. Lloyd, Pooley and Sons, Reading Company, Shand and Mason, Tangye, Weston. Bronze Medal—Baines, N. Defries, Electro-Magnetic Company, Gas Meter Company, E. Green and Son, Kennedy, Marshall, Sons, and Co., Paul, Royal Life Protection Society, Sugg, West and Gregson, Williamson, North Moor Foundry Company. Honourable Mention—Bastier, Bernays, Denison, Dewrance, Duckham, J. C. Hill and Co., T. Lambert and Sons, Leoni, Newton and Bradcock, Swann, R. W. Thomson, Warne, Westminster and London Meter Company.

CLASS 54.—*Machine Tools*.—Gold Medal—Hill Shepherd, Stewart, Sharp. Silver Medal—D. Davies, De Bergen, Tannett, Walker, Thwaites and Carbutt, Worsam. Bronze Medal—Bass, Clayton, Massey, Neilson, Charles Powis, Powis and James, Robinson (Rochdale), Whitehead (Preston). Honourable Mention—Easterbrook, Sketchley, Rhodes.

CLASS 55.—*Apparatus and Processes used in Spinning and Rope Making*.—Gold Medal—Lawson, Platt. Silver Medal—Brook, Combe, Horsfall, J. and S. Smith, Wren. Bronze Medal—Booth, Dixon, Irvine, Leoni, Watkins. Honourable Mention—Hodgkin, Mallinson.

CLASS 56.—*Apparatus and Processes used in Weaving*.—Gold Medal—Howard and Bullough, Leeming, George Hodgson. Silver Medal—Hall (Bury), Hattersley, Keighly, Parker, W. Smith and Brothers. Bronze Medal—Cooke and Hacking, Ferrabee, Sowden and Stephenson, Lindsay Urquhart. Honourable Mention—Ingham, Salter.

CLASS 57.—*Apparatus and Processes for Sewing and for Making up Clothing*.—Silver Medal—Thomas, Wanzer. Bronze Medal—Newton Wilson, Simpson, Turner. Honourable Mention—Alexandra, Clements, Pitt.

CLASS 58.—*Apparatus and Processes used in the Manufacture of Furniture and other Objects for Dwellings*.—Nil.

CLASS 59.—*Apparatus and Processes used in Paper-making, Dyeing, and Printing.*—Silver Medal—Boil-deau. Bronze Medal—Robinson. Honourable Mention—Stones.

CLASS 60.—*Machines, Instruments and Processes used in various Works.*—Nil.

CLASS 61.—*Carriages and Wheelwrights' Work.*—Gold Medal—Peters. Silver Medal—Aldebert, Cockshoot, Cole, Holmes, Lawrie, Mason, E. and G. Morgan, Rock, Ward, Woodall, Wyburn. Bronze Medal—Evans, Fuller, Hutton, Ivall, M'Naught and Smith, F. Mulliner, H. Mulliner, Offord, Starey, Thorn, Windover. Honourable Mention—Cooper, Davies.

CLASS 62.—*Harness and Saddlery.*—Silver Medal—Haynes, Swayne. Bronze Medal—Bliss, Hampson, Martin, Shammon. Honourable Mention—Aldred, Blackwell, Cuff, Ellam, Head, Jassman, M'Cracken.

CLASS 63.—*Railway Apparatus.*—Gold Medal—Kitson, Saxby and Farmer, R. Stephenson. Silver Medal—Lilleshall, Pooley (Liverpool), Turton. Bronze Medal—Alice Gordon, Livesay, Preece, Spencer (Newcastle). Honourable Mention—Dering, Fairlie, Hughes, Ruston, Proctor.

CLASS 64.—*Telegraphic Apparatus and Processes.*—Gold Medal—Henley, Hooper. Honourable Mention—Nicoll.

CLASS 65.—*Civil Engineering, Public Works, and Architecture.*—Gold Medal—Chance Brothers, Minton. Silver Medal—Blanchard, Blashfield, Chubb, C. B. Cole, J. Cliff and Son, Doulton, Hobbs, Jennings, Maw and Co., Peake, Fulham, White Brothers. Bronze Medal—Brooke, Chatwood, Clark's Blinds, Colthurst, Eassie, Gallichan, Gotto, Greaves, Macdonald, Norman, F. Ransome, A. Robinson, Sissons and White, Welch Slate Company. Honourable Mention—Cooke, Sandham, Lord Willoughby.

CLASS 66.—*Navigation and Lifeboats, Yachts, and Pleasure Boats.*—Gold Medal—Clarke (Great George-street), Humphries and Tennant, Laird Maudsley, Randolph, Samuda, Thames Iron Works. Silver Medal—Colomb, Denny, Gisborne, Halstead, Martin, C. Mitchell, Palmer's Company, Ravenhill, Rennie, J. S. White. Bronze Medal—Bolton, Clifford, Gourlay, Harfield, I. Harvey and Co., Hurst, Huxhams and Brown, Inglis, Lloyd's Register, Matthew, Oswald, Richardson, Duck, J. Taylor and Sons, Ward. Honourable Mention—Daft, Hay, Lumley, Ritchie, Tucker, Walker, W. H. Walker, Wishart.

GROUP VII.—FOOD, FRESH OR PRESERVED, IN VARIOUS STATES OF PRESERVATION.

CLASS 67.—*Cereals, and other Eatible Farinaceous Products, with their Derivatives.*—Silver Medal—Berger, Orlando Jones, Raynbird, Reckitt. Bronze Medal—Steward (Bristol), Pile (Whitby).

CLASS 68.—*Bread and Pastry.*—Silver Medal—Huntley, Peck, Frean.

CLASS 69.—*Fatty Substances used as Food—Milk and Eggs.*—Nil.

CLASS 70.—*Meat and Fish.*—Silver Medal—Morton.

CLASS 71.—*Vegetables and Fruit.*—Silver Medal—Crosse and Blackwell. Bronze Medal—Batty, Burgess.

CLASS 72.—*Condiments and Stimulants; Sugar and Confectionery.*—Silver Medal—Colman, Fry, Salt (Chamber of Commerce). Bronze Medal—Batty, Crosse, Keen. Honourable Mention—Burgess, Gatti.

CLASS 73.—*Fermented Drincks.*—Gold Medal—Allsopp, Bass. Silver Medal—Aitcheson, Ballingall, Burton Brewery.

GROUP VIII.—LIVE STOCK AND SPECIMENS OF AGRICULTURAL BUILDINGS.

CLASS 74.—*Farm Buildings and Agricultural Works.*—Nil.

CLASS 75.—*Horses, Asses, Mules.*—Nil.

CLASS 76.—*Bulls, Buffaloes, &c.*—Nil.

CLASS 77.—*Sheep, Goats.*—Nil.

CLASS 78.—*Pigs, Rabbits.*—Nil.

CLASS 79.—*Poultry.*—Nil.

CLASS 80.—*Sporting Dogs and Watch Dogs.*—Nil.

CLASS 81.—*Useful Insects.*—Nil.

CLASS 82.—*Fish, Crustacea, and Mollusca.*—Nil.

GROUP IX.—LIVE PRODUCE AND SPECIMENS OF HORTICULTURAL WORKS.

CLASS 83.—*Glass Houses and Apparatus.*—Nil.

CLASS 84.—*Flowers and Ornamental Plants.*—Nil.

CLASS 85.—*Vegetables.*—Nil.

CLASS 86.—*Iruit Trees.*—Nil.

CLASS 87.—*Seeds and Saplings of Forest Trees.*—Nil.

CLASS 88.—*Hot House Plants.*—Nil.

GROUP X.—ARTICLES EXHIBITED WITH THE SPECIAL OBJECT OF IMPROVING THE PHYSICAL AND MORAL CONDITION OF THE PEOPLE.

CLASS 89.—*Apparatus and Methods used in the Instruction of Children.*—Silver Medal—Christian Knowledge Society, Home and Colonial, John Hullah, Sunday School Union. Bronze Medal—Oliver and Boyd, Williams, Windsor. Honourable Mention—W. Stevens.

CLASS 90.—*Libraries and Apparatus used in the Instruction of Adults, at Home, in the Workshop, or in Schools and Colleges.*—Gold Medal—Book Hawking Union, South Kensington. Honourable Mention—Cronmire, Wright.

CLASS 91.—*Furniture, Clothing, and Food from all sources, remarkable for useful qualities combined with cheapness.*—Honourable Mention—Harry Tayler.

CLASS 92.—*Specimens of the Clothing worn by the people of different Countries.*—Nil.

CLASS 93.—*Examples of Dwellings characterised by cheapness, combined with the condition necessary for health and comfort.*—Bronze Medal—Lord Digby.

CLASS 94.—*Articles of all Kinds manufactured by Working Masters.*—Nil.

CLASS 95.—*Instruments and Processes peculiar to Working Masters.*—Nil.

The Emperor distributed the prizes at a grand ceremonial in the Palais de l'Industrie on Monday last, the 1st instant. His Imperial Majesty delivered the following speech :—

" Gentlemen,—After an interval of twelve years I have come for the second time to distribute the rewards to those who have most distinguished themselves in those works which enrich nations, embellish life, and soften manners. The poets of antiquity sung the praises of those great games in which the various nations of Greece assembled to contend for the prizes of the race. What would they say to-day were they to be present at these Olympic games of the whole world, in which all nations, contesting by intellect, seem to launch themselves simultaneously in the infinite career of progress towards an ideal incessantly approached without ever being able to be attained? From all parts of the earth the representatives of science, of the arts, and of industry, have hastened to vie with each other, and we may say that peoples and kings have both come to do honour to the efforts of labour, and to crown them by their presence with the idea of conciliation and peace. Indeed, in these great assemblies, which appear to have no other object than material interests, a moral sentiment always disengages itself from the competition of intelligence—a sentiment of concord and civilisation. In drawing near, nations learn to know and to esteem each other; hatred is extinguished, and the truth becomes more and more evident that the prosperity of each country contributes to the prosperity of all. The Exhibition of 1867 may justly be termed universal, for it unites the elements of all the riches of the globe; side by side with the latest improvements of modern art appear the products of the remotest ages, so that they represent at one and the same time the genius of all ages and of all nations. It is universal, for, in addition to the marvels luxury brings forth for the few, it displays also that which is demanded by the necessities of the many. The interests of the la-

bouring classes have never aroused more lively solicitude. Their moral and material wants, their education, the conditions of life at a cheap rate, the most productive combinations of association, have been the object of patient inquiries, of serious study. Thus all improvements march forward. If science, by turning matter to account, liberates labour; the cultivation of the mind, by subduing vices, prejudices, and vulgar passions, also liberates humanity. Let us congratulate ourselves, gentlemen, upon having received among us the majority of the sovereigns and princes of Europe, and so many distinguished visitors. Let us also be proud of having shown France as she is—great, prosperous, and free. One must be destitute of all patriotic faith to doubt of her greatness; must close one's eyes to evidence to deny her prosperity; must misunderstand her institutions, tolerant sometimes even of license, not to behold in them liberty. Foreigners have been able to appreciate this. France—formerly disquieted, and casting out her uneasiness beyond her frontiers—now laborious and calm, always fertile in generous ideas, turning her genius to the most diverse marvels, and never allowing herself to be enervated by material enjoyments. Attentive minds will have divined without trouble that notwithstanding the development of wealth, notwithstanding enticements towards prosperity, the fibre of the nation is always ready to vibrate as soon as the question of honour and the country arises; but this noble susceptibility could not be a subject of alarm for the repose of the world. Let those who have lived for a short time amongst us carry to their homes a just opinion of our country; let them feel persuaded of the sentiments of esteem and sympathy we entertain for foreign nations, and our sincere desire to live at peace with them. I thank the Imperial Commission, the members of the jury, and the different committees, for the intelligent zeal they have displayed in the accomplishment of their tasks—I thank them also in the name of the Prince Imperial, whom, notwithstanding his tender age, I have been happy to associate in this great undertaking, of which he will retain the remembrance. I hope the Exhibition of 1867 will mark a new era of harmony and of progress. Assured that Providence blesses the efforts of all who, like ourselves, desire good, I believe in the definitive triumph of the great principles of morality and justice, which, while satisfying all legitimate desires, are alone able to consolidate thrones, to elevate nations, and to ennoble humanity."

THE MACHINERY AT THE PARIS EXHIBITION.

The arrangements for ventilating the building consist in a system of circular and radiating underground galleries. The 16 radiating galleries communicate with the outer air by means of 16 air shafts, down which the air is drawn by the assistance of the artificial current produced by an air jet placed in each of these radiating galleries, and distributed throughout the building by means of a number of air-grates in the flooring. The compressed air is supplied to these air jets through pipes, varying in diameter from one to two feet. The quantity of air passing through the jets is regulated by a valve in form of a disc, the maximum opening of which is 130 square centimetres, with a speed of 6 ft. 6 in. per second.

The total force employed in compressing air is 105 nominal horse power, arranged as follows:—

The first is a 15-horse power portable engine, by Messrs. Farcot and Sons, of St. Ouen, driving two air-fans, constructed by M. Perrigault; these supply two air jets. The next four air jets are supplied by a horizontal engine of 25-horse power, by Messrs. Gargan, of Paris, working three exhausting cylinders, 2' 8" in diameter, with 2' 4" stroke, situated in the Belgian boiler-house. Four other air jets are supplied by two large air fans, by M. Perrigault, from the shafting in the Austrian

section of the machinery gallery, driven by a horizontal engine of 25-horse power. The air is supplied to the remaining six air jets by means of blowing cylinders, 4 ft. in diameter, with 2' 8" stroke, by Messrs. Gauthier and Phillipon, driven by horizontal engines of 40-horse power, situated in the park, near the Egyptian temple.

The spinning and weaving machinery occupies a large space in the French section. Messrs. Stehelin and Co., of Bitschwiller (Haut Rhin), exhibit a self-acting mule for cotton-spinning, with 442 spindles. The cotton passes from the bobbin between four rows of rollers to the spindles; the end pair of rollers only are weighted. To give increased steadiness to the carriage, its back forms in plan a parabolic curve, instead of the back and front being parallel, as in those generally in use. They also exhibit a highly ingenious circular wool-combing machine. The wool, in ten or more slivers, is fed in between a pair of fluted rollers; it is then led forward by an endless chain of combs, arranged in a highly ingenious manner, on which it is placed by a descending brush; from this it is seized by a pair of jaws, that take it forward, and from these it is taken by a comb, and placed on the revolving circular comb; the long fibres which project outside the teeth are guided, by an endless leather strap, to a pair of fluted rollers, where a sliver is formed, and passed through the centre of a revolving hollow cone into a can; the short wool remaining between the teeth of the comb is cleared out by means of triangular plates, and passed off between fluted rollers to another can.

Messrs. Morel and Co., of Roubaix (Nord), also exhibit a circular wool-combing machine. The slivers supplied from fifteen bobbins are brought forward over the circular horizontal revolving comb, when the wool is seized by a pair of jaws and placed on the teeth of the comb by a descending brush; the long fibres that remain outside the comb are guided by an endless band of leather between fluted rollers, and the sliver thus formed is led away to the can. In this machine there are two feeds opposite each other, and two slivers of long wool are formed on each side. The short wool is guided from between the combs by triangular cleaners and taken to cans. The circular comb is formed of eight concentric rows of teeth placed on a revolving cylinder, inside of which a projection is cast, forming cam motions, by which the jaws and brush receive their respective movements.

A most effective machine is exhibited by M. Buzzon, for preparing woollen or other rags for recarding or for paper making. The rags are fed, by means of an endless feed-cloth, between iron rollers, the bottom one of which is covered with india rubber, within range of a drum making about 1,000 revolutions per minute, covered with steel teeth, resembling those of a circular saw; the top feed roller is kept clear by means of a knife, which prevents the wool being wrapped round it. The drum is cleared of wool on the delivery side by a circular brush. This machine requires about 1½ horse power, and prepares from 300 lbs. to 400 lbs. per day.

M. Vouillon, of Louviers (Eure), shows a machine for the production of "fils feutres," threads which are not spun but felted. The thirty slivers from the condenser are passed, on an endless felt band, covered with linen, under four wooden rollers covered in a like manner. These rollers have a backward and forward motion across the endless band which rubs the slivers into yarn. A steam-pipe is introduced between the first two rollers, for the purpose of heating the wool, in order to facilitate the operation of straightening the fibres.

Messrs. Radiquet and Lecène, of Paris, exhibit several circular stocking frames, in which, by aid of electricity, when a thread breaks the machine is stopped.

A highly ingenious machine for making fishing-nets is exhibited at work, by Messrs. Jouanin and Co., of Paris. In this machine the bobbins containing the warps are placed on a frame at the back of the machine, and correspond with the number of meshes in the width of the

net; it passes over guide-pulleys, so arranged as to keep the threads in a horizontal line, to a roller round which it is wound once, at the front of the machine. In the interval between the guide-rollers and the front roller is a sinker, formed of a horizontal bar, carried by two levers on a rocking shaft, and so counterbalanced as to take up any slack in the warp-thread, and yet to rise when the threads are pulled very tight, as is done in a certain part of the knotting process. The loops of the warp are engaged by a row of horizontal hooks, each of which works upon its axis by means of a long rack. The weft-thread, which is contained in a row of spools placed each in a sort of shuttle in front of the machine, is passed through the loops previously formed in the warp, and in this manner the knot is formed, each shuttle being so guided by the frame by which it is moved to form its proper knot and mesh. This machine works with such precision that the thread is never frayed, and the knot of the mesh is never too tight; this is considered to be an advantage for the operation of tanning, the liquid being able to soak in more readily. The speed of this machine is twelve revolutions per minute, which would give 7,920 rows of knots in a day of eleven hours if the machine were not stopped for the re-filling the spools.

Messrs. Schneider, Legrand, Martinot, and Co., of Sedan (Ardennes) show a machine for calendering or preparing cottons or linens for the calico-printer, in which the fibrous down is removed from the surface of the cloth by passing the piece rapidly over the surface of a series of steel plates, with small teeth; these blades act in the same manner as saws, and have a backward and forward motion across the piece, which is drawn over them at the rate of 450 yards per hour. The first blades have 30 teeth to the inch, and the finishing blades 40 to the inch.

The same firm also exhibit a shearing machine and a teasing machine for cloths and woollens.

Messrs. Hermann, Devinck, Debatiste all exhibit excellent machinery for grinding and preparing chocolate. In the machines constructed by the first, the table and stones are all in granite.

The motive power in the Belgian section has been supplied by Messrs. Houget and Teston, of Verviers, from whose plans the boilers were constructed by Messrs. Petry and Chandoir, of Liège. Each boiler is constructed with the grates leading into the same combustion chamber, and, if care is taken in firing alternately each furnace, the smoke produced by the fresh combustion is burnt. The gases thus pass through the tubes, of which there are 75. The engine supplied by Messrs. Houget and Teston is of 50 nominal horse power. It has two horizontal cylinders, and can be worked either with or without the condenser. The shaft is well balanced by a fly-wheel at each extremity, and the whole is very compact.

Messrs. Houget and Teston also exhibit in motion a series of machinery for preparing wool for spinning; and their carding engines, fitted with Messrs. Apperley and Clissold's diagonal feeders, are of excellent workmanship. The object of this feeder is to lay and deliver the fibres crosswise to the finisher card, to be again straightened by the taker-in rollers. The same firm also show shearing and fulling machinery for cloths and woollen goods. M. Celestin Martin, of Verviers, also exhibits highly ingenious machinery for the preparation and spinning of wool. The first machine, for the purpose of cleaning and oiling the wool preparatory to being carded, is very complete. From this it is taken to the first carding engine and formed into a single sliver or ribbon; forty of these slivers are then transferred to the second carding engine and formed into a single ribbon. This sliver—of larger size than the previous one—is laid backwards and forwards across the endless lattice of the condenser, so as to form a continuous fleece. The novelty in this machine is the mode of dividing the fleece. This is effected by steel springs placed between the cylinder and the

doffer, and the strips pass between two endless bands of leather or rubbers, having an alternate motion across the threads. This machine forms 60 good threads and two wasters at each side. An excellent self-acting mule is also exhibited by this firm.

A colliery winding engine of 200 horse power is exhibited by Messrs. Dorzée and Andry, of Boussu, near Mons.

The Society John Cockerill, of Seraing, exhibit a vertical blowing engine for blast purposes; the blowing cylinder is nine feet in diameter.

In the Prussian section Krupp's big gun attracts a great deal of attention. It is a rifled breech-loader, of cast steel, weighing 50 tons; the carriage, which also is entirely of steel, weighs upwards of 15 tons. The diameter of the bore is 14 inches, and the number of grooves of the rifling is 40. A special railway truck was constructed for the transport of this immense piece of ordnance from Essen.

M. Thomas, of Berlin, exhibits some excellent cloth shearing machines with spiral cutters.

In the Austrian department a double carding engine is exhibited by M. Girardoni, who places two carding cylinders one above the other instead of side by side, and in this manner effects a considerable economy of floor space.

The Italian section, which until quite lately was unarranged, is now in order, and the splendid collection of ores, in class 40, shows the immense mineral resources of this country. Westerman and Co., of Genoa, show a small pair of horizontal screw engines. Ansaldi and Co., of Sampierdarena, exhibit a trunk piston, connecting-rods, one finished and the other a rough forging, for a marine engine of 660 horse power. There are a good many silk winding machines, but these do not present any novelty in design. A goods waggon and several parts of engines, such as axles, springs, etc., of excellent workmanship, are exhibited by the Roman Railway Company.

The large three-cylinder marine engine, of 960 horse power, made in the workshops of the French imperial navy at Indret, are at work every day. Messrs. Schneider and Co., of Creusot, are well represented in their annexe near the Porte de l'Université. They exhibit three locomotives, two marine engines, a horizontal colliery winding-engine, machine tools, specimens of iron-coal, drawings of engineering works that have been constructed by the firm, plans of workmen's cottages in the commune of Creusot, etc.

This immense establishment, including mines, collieries, &c., occupies an area of nearly 300 acres, of which $47\frac{1}{4}$ acres are covered with buildings. The number of workmen employed on their works is 9,950, with a total engine power of 9,750 horses.

The first locomotive is an express engine, constructed for the Great Eastern Railway (England), from drawings furnished by Mr. R. Sinclair. The next is a goods engine, for the Creusot Railway. And lastly, a small engine for a mineral line of 3ft. 4in. gauge, and weighing about six tons. Since 1838 the Creusot iron works have constructed 1,100 locomotives. The first marine engine is of 950 nominal horse power, for the iron-clad *L'Océan*. It is of the type now adopted by the imperial navy, with three cylinders 84in. in diameter with 4ft. 4in. stroke. The actual power is 3,800 horse, making 55 revolutions per minute. The steam is admitted at high pressure in the middle cylinder, and afterwards allowed to expand in the two others, on the Woolf principle. The slide-valves are moved by an independent crank shaft, situated above the main shaft, so as to avoid the necessity of eccentrics and give more bearing surface. Another marine engine is of 265 nominal horse-power, forming one-half the engine power of the coastguard iron-clad ram, the *Cerbère*, of the imperial navy. The two cylinders are 48in. in diameter, with 2ft. 4in. stroke.

In the Wurtemberg annexe, Messrs. Decker, Brothers, and Co. exhibit Henry Völter's patent machinery for

the manufacture of wood pulp for paper-making. This machinery is driven by three portable engines, of the united power of 50 horses. It consists principally of the "defibrer," or grindstone, by which the wood is reduced into fibre, whilst water is continually running over it. The wood is held firmly, and pressed against the stone by a self-acting mechanism, and ground into a mass of fibre. It then passes through a coarse sorting apparatus, in which the splinters of wood are removed. This apparatus separates at the same time the coarse part of the fibre, and conducts it to the refiner, and it also serves for the mixing of the coarser pulp. The refiner consists of a pair of millstones, between which the pulp is ground; it then passes to the sorting apparatus, consisting of a series of cylinders, covered with wire gauze. The different qualities of pulp are sorted according to the degree of fineness, and the different qualities are delivered into tanks. Eighty of these machines have already been constructed, and supplied to various parts of Europe.

The Swiss section contains a good supply of cotton-spinning machinery by Messrs. Rieter and Co., of Winterthur (Zurich), consisting of scutching and lapsing machines. The process of double carding is exhibited, that is to say the carding of the cotton in two carding engines only, the "breaker," and the "finisher," with the intermediate process of doubling.

The "breaker" carding-engine is provided with six workers and cleaners; the cotton is taken in the usual manner, by means of a comb, or toothed steel plate, which is made to vibrate in front of the doffer, removing the cotton in a light fleece, the full width of the doffer; the fleece is contracted and drawn through a tube by means of a pair of rollers, and the slivers thus formed are delivered and coiled in a cylindrical tin can, revolving slowly on its own axis.

Twenty-four cans, containing the slivers thus formed, are arranged at the back of the lap doubling machine. The slivers are passed through two pair of callender rolls, and the laps thus formed are wound upon a light wooden bobbin placed in the channel between a pair of fluted rollers; each sliver is provided with a stopping motion, so that if any break, the machine is stopped, and in this manner waste and spoiled work is prevented. Four of the laps thus formed are placed end to end on the finisher card, which is mounted with twenty-four self-stripping flats, on Wellmann's system. The fleece is removed from the doffer in the usual manner, and formed into a sliver, which is coiled in a can revolving on its axis. The drawing frame consists of a series of rollers, through which eight slivers are drawn into one, and deposited in a coiling can. The slubbing frame, in which the sliver is twisted for the first time, is of forty spindles, with the usual bobbin and fly action. The intermediate frame is of 72 spindles, and the roving frame of eighty spindles, with the usual three pairs of drawing rollers each. The rovings from this last are spun into yarn on a self-acting mule.

Messrs. Wegmann and Co., of Baden (Switzerland), exhibit five silk throwing machines of excellent workmanship and arrangement.

M. Honegger, of Ruti (Zurick), some well-made looms for silk weaving.

An important and simple machine is exhibited by M. S. Golay, of Geneva, for dressing and preparing mill stones. The cutting tool consists of a black diamond, held in a notch between two circular steel plates, about three-quarters of an inch in diameter, screwed up tight together, on a small steel mandril, making about 2,000 revolutions per minute. An upright standard is fixed in the centre of the stone, with a long horizontal jib, on which the carriage holding the cutter is made to traverse by means of a screw and hand wheel. In dressing a stone by means of this machine a great economy of time is effected, as compared with hand-dressing, and the work is done with greater accuracy. The diamond, costing four to five shillings, is stated to last about a year.

The United States Sanitary Commission, or rather Dr. Thomas W. Evans, in a small building near the Porte de l'Université, shows an interesting collection of articles for the relief of the sick and wounded, and which rendered great service during the late civil war. Besides several ambulances, in one of which about three thousand soldiers were transported during the war, a model of a railway ambulance, or "hospital car," is shown. This model is a fac-simile of the hospital cars employed by the United States Sanitary Commission on the railway between Washington and New York, as well as on several other military railways in other parts of the States. In this model everything is shown. Couches, of which there are 30; dispensary wine closet; water closet; system of ventilating and heating, &c., as was employed in the construction and equipment of these cars; and externally it represents perfectly the construction of an American passenger car. It is provided with a patent safety break, and a set of self-acting ventilators. The couches are hung from pins in the uprights, by means of four strong rings of vulcanised india-rubber, and in this manner an easy movement is secured with an almost entire absence of concussion, even over the roughest roads. Besides ambulances, several medicine waggons, field dispensaries, models of hospitals, hospital tents, hospital furniture, and surgical instruments, are shown.

Fine Arts.

ARUNDEL SOCIETY.—Mr. Layard M.P., in the absence of Lord Elcho, took the chair at the last annual meeting of this society. In opening the proceedings he dwelt on the favourable aspect of the report. The number of members under the recent reconstruction is likely, in the course of the year, to be doubled, and the annual receipts have now reached upwards of £5,000. This growth in resources has enabled the society to extend the sphere of its operations. In the course of the present year two series of publications will be issued, in place of one, to the first and second class of subscribers respectively. These will include chromo-lithographs from frescoes by Raphael, Ghirlandaio, and Razzi. Mr. Layard has kindly undertaken to write for the society a descriptive notice of the Brancacci Chapel, which will be distributed among the members, with the closing illustration of that rich repository of mural decorations. It is anticipated that this critical notice may settle certain historic questions as to the authorship of the frescoes, which have long been subject of doubt. The balance-sheet of the society shows that the arrangement made with the Department of Science and Art for the sale of photographs has lately been brought into successful operation. Among the most important works now in course of execution are chromo-lithographic reproductions of Van Eyck's celebrated picture, "The Adoration of the Lamb," together with the accessory side panels, or painted doors. Also specimen drawings have been made by Signor Mariannecci of Michael Angelo's "Prophets" and "Sibyls" in the Sistine Chapel. In these and other copies Signor Mariannecci has been directed by the council to transcribe more literally than heretofore the ancient frescoes in their actual state of decay. This instruction was given in consequence of the dissatisfaction expressed by many of the members at the modern aspect imparted to professed fac-similes of ancient works. The project, of which we gave notice some weeks since, to reproduce in chromo-lithography a selection from the sepulchral monuments of the middle ages, is in course of being carried into effect. As examples of the successful combination of architecture, sculpture, and pictorial or other surface enrichment, the sepulchral monuments of Italy are deemed to be unrivalled. Accordingly the council of the Arundel Society have engaged Professor

Snauth, of Stuttgart, to make careful copies in colours or monochrome of two valuable monuments in the church of San Giovanni e Paolo, Venice. A favourable specimen of the Professor's works, together with other interesting drawings recently executed, may be seen in the Society's rooms, Old Bond-street. In the prosecution of these important undertakings the Society will obtain valuable assistance through the accession of Mr. Street to the council.

Manufactures.

STEAM-ENGINES FOR COMMON ROADS.—Great efforts are being made in France to introduce steam trains on common roads, for the transport both of goods and passengers, and a company has been formed to carry out the plan on a large scale. Some experiments have been tried in Paris, Nantes, and elsewhere, and the Universal Exhibition, where there is a large collection of traction and other engines of nearly all nations, has given a fresh impulse to the movement. The object in view in France is different to that in England, the loads to be moved are generally lighter, and there is a want of more passenger conveyance at low rates; the engines required are therefore less powerful but faster. The difficulty to be surmounted is the provision of a reserve force for hills and bad pieces of road; several attempts have been made to meet this, and one engine now at the Exhibition, the invention of M. Larmanjat, is said to have solved the problem. When it is desired to increase the power of the engine the two ordinary driving-wheels are thrown out of action and replaced by others, which are so arranged that the substitution can be made in less than a minute; in fact, the speed is reduced from seven or eight to about two miles per hour, while the rate of working of the parts of the machine itself remains the same. The engine now at the Exhibition has been seen more than once on the boulevards around the Champs de Mars, drawing a small omnibus in its train, and although it has only the nominal force of three horses it seems to do its work effectively, it certainly manoeuvres with great ease, and we have seen it mount and descend the Pont d'Alma with great apparent ease. It is reported of it that its first trial took place at Auxerre, where it drew a low-wheeled truck, such as are employed in the streets of Paris, carrying about $1\frac{1}{2}$ ton of goods and 27 persons, making in the whole a load of three tons, going up a long road with a rise of 8 in 100; the average speed, going and returning, was five miles an hour. It is said also to have performed the journey between Auxerre and Avallon, the distance there and back being nearly seventy miles, drawing a very heavy diligence containing fifteen persons; the road presents inclines, varying from 3 to 5 in the 100, and the average speed effected was nearly seven miles an hour. The expenditure for the journey is given at 21 francs (16s. 10s.). The engine has made several excursions around the Champ de Mars, drawing an omnibus carrying eighteen or twenty persons with comparative ease, and it is reported that it has performed about a hundred miles without the slightest disarrangement.

Commerce.

THE WOOL TRADE.—The Paris correspondent of the *Times* says:—"Some statements lately prepared with regard to the results of colonial and foreign sheep farming show that, while the production of wool in Australia had increased from 55 million pounds in 1859 to 114 $\frac{1}{2}$ millions in 1866, or 108 per cent., that of the River Plate—where the same kind of wool is grown, but which is practically unused in England—is increased from 42 millions to 155 millions, or 269 per cent. English woollen manufacturers at present depend

almost exclusively for their supply of fine wool upon the growth of Australia and the Cape, while Continental manufacturers use all three kinds, according to the current value of each. If English consumers, it is remarked by Messrs. J. L. Bowes and Brothers, of Liverpool, would do the same, greater evenness of price would result, without acting prejudicially to the interest of colonial growers. It may be urged that English consumers do not like to use River Plate wool on account of the 'burr,' but it is ridiculous to let a slight mechanical difficulty prevent the use of a wool which, in a few years, will be more abundant than that of any other country. It is mentioned as a well-known fact that Belgian spinners frequently buy burry Buenos Ayres wool in England, take it to Belgium, pick out the burr with a machine invented and often made in England, and, having spun the wool into yarn, return it into England and Scotland for sale and consumption."

Colonies.

HARVEST IN AUSTRALIA.—The returns as to the wheat harvest show that the total crop was about 6,500,000 bushels, which gives a surplus for export of 104,000 tons. In Victoria, too, the yield has been very abundant. Under these circumstances the question of an European market for Australian corn is becoming one of momentous importance to the colonial farmers. The glutted state of the wheat market, together with the effects of the drought on sheep farming, and the closing of the Burra mines have given rise to much discussion on the question of new industries.

Publications Issued.

OFFICIAL ENGLISH VERSION OF THE CATALOGUE OF THE PARIS EXHIBITION (J. M. Johnson and Sons).—A second edition of the English general catalogue has been issued. It is greatly improved and enlarged, but without any increase of price. The new edition contains 1,008 pages, exclusive of advertisements; it is well printed, and exhibits in all respects great care in its production. This new issue is prefaced by a map, printed in colours, and showing not only the place of each country within the Exhibition building, but the position and object of the numerous structures in the park. There is also, in addition to a full general table of contents, a tabular index, specially arranged in such a way that the visitor may either examine the Exhibition class by class or country by country; this is effected, in two pages, by giving in one column the names of all the exhibiting countries, and in 94 other columns the number of the page of each country in each class. It may be added that while the editor of the French edition has only divided the exhibits of each country by groups, Mr. Yapp, the compiler of the English translation, has adhered strictly to the classification, giving the contributions of each country under each class.

Notes.

AERONAUTICAL EXPERIMENTS IN FRANCE.—The first ascent with Nadar's great balloon, the "Géant," was made recently from the esplanade of the Invalides, in Paris. Besides the captain, assistant-captain, and two men, there were in the car M. M. Sourel and Simonin, members of the Meteorological Society of France, and M. W. de Fonville, scientific editor of *La Liberté*. There was some difficulty in getting the great machine to rise, and one person was compelled to descend before the buoyancy was sufficient, but at last the great balloon rose majestically and was soon lost in the clouds. The trip was merely experimental, and M. Simonin records the

few facts observed. The balloon entered the clouds at 650 mètres above the earth, and in five minutes after, having ascended 350 mètres more, the aeronauts were in full sunlight. The total altitude attained was 1,030 mètres; the mercurial barometer marked 674 millimètres, the thermometer 16° centigrade, the hair hygrometer 88 $\frac{1}{2}$. At the surface of the earth before starting the pressure of the air had been 760 millimètres, the temperature 18°, and the humidity 82. The trip only lasted one hour, and the balloon descended at Chilly, four leagues from Paris, without any further accident than the breaking of a thermometer, the uprooting of an apple-tree, and the knocking off the coping-stones of a wall. The direction was due south, and the force of the wind 18 kilomètres, or more than eleven miles an hour. Besides the instruments in the charge of the aeronauts themselves, there were others in the car which were sealed; these were specially contrived by M. Regnault to check the records of the former, and were not to be opened until returned to the College of France. Another ascent is to be made with the same balloon in a few days. On the same day M. Flammarion made a third ascent in the smaller balloon of the Association.

PROPOSED MEMORIAL STATUE FOR THE Isthmus of Suez.—M. Faustin Glavany, Secretary in the Turkish diplomatic service, and deputed by the Sultan to represent his Government at the Archaeological Congress of Antwerp, has just published a project for a commemorative monument to be erected at the entrance of the canal of the Isthmus of Suez. This monument, which the author proposes to call the Temple of Peace, is to be in the form of a pyramid, as characteristic of Egyptian architecture. On the apex of the pyramid is to be a statue of Peace, bearing in one hand a flambeaux, and in the other an olive branch, and on the four sides of the pyramid, and its base, inscriptions in Coptic, Hebrew, Greek, Arab, Latin, French, Assyrian cuneiform character, and Turkish, with sixteen escutcheons, bearing the names of maritime nations or their sovereigns.

Correspondence.

RATING OF INSTITUTIONS.—SIR,—You will perhaps recollect that some months ago a movement was set on foot by the Council of this Institute to obtain exemption from the assessment of Institutions like ours to the Inhabited House Duty, except for those portions actually occupied as dwellings. I have now the pleasure of informing you that the Lords of the Treasury have, on the recommendation of the Board of Inland Revenue, issued an authority for the limitation of the assessment of public buildings devoted to the culture of science, literature, and art, to such portion of the building beneficially occupied as a dwelling, when such portion is of the annual value of £20 or more. Would you kindly notice this in the *Journal* of the present week for the benefit of the managers of other Institutions.—I am, &c., EDWIN SMITH, Secretary.

Birmingham and Midland Institute, 2nd July, 1867.

MEETINGS FOR THE ENSUING WEEK.

TUES ...Ethnological, 8. 1. Mr. J. Thomson, "On the Ethnology of Cambodia, with some account of the Jacobs of Jahore." 2. Mr. H. C. Creswick, "On the Syllabic Characters in use among the Key Negroes." 3. Mr. G. M. Sprout, "On the Probability of a Stone Age."

WED ...Royal Literary Fund, 3.

Patents.

From Commissioners of Patents' Journal, June 28th.

GRANTS OF PROVISIONAL PROTECTION.

Artificial limbs—1663—T. Brown.
Axles, &c.—1727—J. H. Snelson.

Balloons—466—M. Henry.
Brooches, fastenings for—1703—J. H. Kerly.
Brushes—1679—J. Sheldon.
Candle-making machinery—1689—J. C. Ralston.
Carriage step cover and wheel fender combined—1721—J. Millward.
Carriages, &c.—1681—J. Offord.
Chaff-cutting machines, portable—1665—R. Maynard.
Coal-cutting and rock-boring engines—1704—F. B. Dering.
Cranes, working, regulating, and controlling—1680—A. Barry.
Cruet frames, &c.—1711—C. Toft.
Dredging apparatus—539—H. A. Bonneville.
Flax, &c., heckling—1719—W. Rowan.
Furnaces—1735—J. Glover.
Gas, apparatus for registering quality of—1684—J. Warburton.
Gas-cooking apparatus—439—W. Hill and H. C. Wilberforce.
Gates and fences—1667—G. R. Turner and W. T. Allen.
Gun-barrels—1687—F. Gisentini.
Horses, &c., roughing—1699—W. French.
Hot-water apparatus for heating and warming—1673—H. Crowe.
Inkstands—1669—C. E. Giojola, J. H. Gray, and P. Martinengo.
Jewellery, articles of—1731—A. C. Lion.
Knife cleaner—1693—O. Barrett and H. Leggott.
Knitting-heads—1688—J. Collier, R. Howarth, and W. Cryer.
Liquids, apparatus for raising—1427—A. M. Clark.
Looms—1725—D. Crichton, W. Donbavand, and D. Crighton.
Looms, arrangement of reeds used in—1675—D. Rorison.
Lubricators—1035—J. C. des Roseaux.
Meat, &c., preserving—1493—E. H. C. Monckton.
Motive-power, obtaining—1691—J. Hargreaves.
Mustard, application of for curative purposes—1212—E. Guenin.
Ornamental bricks—1569—H. Pether.
Paper, &c., ornamenting surfaces of—1695—A. Parkes.
Pipes or tubes, unions for—1694—N. Thompson.
Plastic and fibrous materials, moulding—1700—J. Macintosh.
Pontoons—1723—J. Cochrane.
Printing-type, arrangement of—1631—E. Taylor.
Punching, cutting, and embossing apparatus—1702—A. L. Dowie and R. McIntyre.
Railway points and signals, compound lever for working—1579—T. F. Cashin.
Railway tickets, machines for dating or printing—1659—J. Adams.
Rotary pumps—1671—A. L. Bricknell.
Seeder, cultivator, and roller combined—1571—E. T. Hughes.
Sewing machines—1677—E. T. Hughes.
Sewing machines—1690—H. Willis, G. Rice, and A. Maxfield.
Shoe-brushing apparatus—1483—G. Haynes.
Spring hooks—1657—I. Evans.
Stamping machine—1692—J. Turner and R. B. Dunnett.
Steam-boilers, fitting tubes in flues of—1678—W. W. and J. Wood.
Steam-engines—1661—E. Bland.
Steam-ferry for ocean transit of railway trains—1503—E. H. C. Monckton.
Threshing machines, &c.—1709—R. Hornsby, J. Bonnall, and H. Shield.
Tobacco pipes—1686—H. Parker.
Watches—1114—S. Harrison.
Window blinds, &c., securing cords, &c., used in raising—1696—R. E. Pepys and J. Warburton.
Woollen cloths, manufacture of—1683—R. Scott, J. Nixon, and J. Beaumont.
Zinc, manufacture of—1701—T. Robinson and J. Pierce.

INVENTIONS WITH COMPLETE SPECIFICATIONS FILED.

Diary blotting pad—1832—J. H. Kearns.

Sewing machines—1810—H. Oram.

Textile fabrics, dyeing black—1825—R. W. Morrell.

PATENTS SEALED.

3424. C. Harrison.	47. W. Way.
3433. C. Sheridan.	57. R. Winder.
3436. W. Exall.	79. H. Buss.
3446. J. T. Griffin.	803. J. W. Yates.
3447. G. P. Pocock.	819. J. Greenshield.
3. A. D. Campbell.	857. T. Peabody.
6. H. A. James.	963. J. Whitworth.
19. J. K. Broadbent.	964. J. G. Jones.
20. W. G. Helsby.	1001. J. H. Barker.

From Commissioners of Patents' Journal, July 2nd.

PATENTS SEALED.

15. J. W. Kenyon.	116. W. Howarth and M. and J. Pearson.
33. D. Dowling and C. Greves.	182. J. H. Johnson.
50. W. Martin.	285. W. E. Newton.
61. R. Robinson.	288. J. Darling.
52. E. C. Prentice.	379. W. Clark.
54. J. H. Johnson.	991. J. Whitehurst & T. Walsh.
56. W. J. Murphy.	1609. W. F. Thomas.

PATENTS ON WHICH THE STAMP DUTY OF £50 HAS BEEN PAID.

1616. T. Thomson and J. Murray.	1630. F. J. Bugg.
1620. W. Clark.	1614. C. J. Tinker.
1623. H. A. Bonneville.	1635. J. Coombe.